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EDITORIAL

LEARNING

"Cease not to learn until thou cease to live; Think that day lost wherein thou draw'st no letter To make thyself more learned, wiser, better." -Guy de Faur Pibrac.

When at the outset of his career, the newly licensed Amateur con-structs his first transmitter, it often happens that he comes in contact with problems of a new genius. The lecturers and books have explained the theory but these difficulties are of a different ilk.

However, with the enthusiasm that is his, and possibly the help of the fellow in the next street, all is finally resolved and his equipment "works." With the progress of time, improvements in construction, design, and technique finally produce the efficient modern rig and the old newcomer proudly displays his suc-cess. He has mastered his problems.

But has he? Every second that passes brings a new thought, circuit, or method. Unless he is willing to use the very latest he is falling to keep up with the subject his hobby is dependent upon

The Amateur of today cannot be expected to compete with the re-search laboratories of vast combines, but he can familiarise himself with their findings by applying in a prac-tical manner the ideas which they so liberally dispense.

This is his part. Not only must he keep abreast with developments by reading about them—he must, in his own modest way, try them out; judging for himself whether they are of value to that world of com-munications where he represents the

munications where he represents the Amateur service. Amateur bands Let's placed of the Amateur bands Let's heart hose call signs testing out some new antenna, some keying method or type of modulation. DX may paralyse the receiver or may be not; but the joy of learning is worth the

effort What experiment did you say you were going to try next? FEDERAL EXECUTIVE

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THE CO	NTENTS
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Single Sideband: Is It Better Than Amplitude Modulation?

BY J. P. COSTAS, W2CRR

A WORD OF WARNING

Before going any further it is only fair to warn the reader of the intent of this article. What I shall attempt to show is that a.m. as a basic modulation process is as a basic modulation process is every bit as good as single side-band. Furthermore, the perform-ance advantages claimed for s.s.b. come about not due to any fun-damental fault of a.m., but rather due to the faulty use we are making of this modulation pro-cess. Assuming that there are still a few readers left we shall continue.

WHAT IS A.M.?

This question on the surface may seem to be a very simple one to answer but there are some points involved which are not too obvious. For ex-ample, if we have a modulating fre-quency f, and a carrier frequency f, quency 1, and a carrier frequency 1, one of the conventional a.m. may be represented as shown in Fig. 1 (a) by a carrier and a pair of sidebands each of half the carrier amplitude. Now as is well known, the carrier wave conveys no intelligence and its removal from the a.m. signal would not affect the inforam. signal would not affect the infor-mation bearing components or side-bands. Thus if we remove the carrier from the conventional am. signal of Fig. 1 (a) we shall have the suppressed carrier, double-sideband am. signal of Fig. 1 (b). Note that the sideband (intelligence) powers in (a) and (b) are the same but that the total signal power in (b) is considerably less than



(b) This is AM as it should be.

Fig. 1. Two Types of AM Signals.

Although the signal shown in 1 (b) does not look like an a.m. signal it is simply a conventional a.m. signal with the carrier removed. As we shall see the carrier component of an a.m. signal need not and should not be transmitted. Once we realise that the carrier component of an a.m. signal is not basic to the modulation process, it becomes clear that the signal of Fig. 1 (b) re-presents "amplitude modulation" just as much as that of Fig. 1 (a) and that

" Reprinted from "CQ." January, 1957.

1 (b) represents the more efficient way of getting the message across.

Questions immediately arise as to how we are to generate and receive double sideband suppressed carrier (d.s.b.) a.m. signals and some of the possibilities will be discussed later in this article.

9 DB, S.S.B. POWER ADVANTAGE-IT DOES NOT REALLY EXIST

We are now in a position to examine the signal-to-noise properties of a dab a.m. system as compared to an s.s.b. system with the aid of Fig. 2. Note that the sideband amplitude for the s.s.b. signal is E volts while the sidebands in the d.s.b. signal are each E%2 volts in amplitude. This makes the average signal power in the two cases the same. If we assume a noise power P. to exist in the small bandwidth experient to average the same. width required to receive the various sidebands the signal-to-noise ratio (on a power basis) will be for s.s.b.

$$\left(\frac{S}{N}\right)$$
 SSB = $\frac{E^{t}}{P_{s}}$

Now in the d.s.b. case if we demod-ulate each of the sidebands properly and combine them, the signal compon-ents will add voltage-wise and the two noise components will add on a power basis. Thus we will have a signal voltage of \$2E and a total noise power of 2Ps. The signal-to-noise ratio for the d.s.b. signal will then be (again on a power basis)

$$\left(\frac{S}{N}\right)$$
 DSB $=\frac{2E^{4}}{2P_{A}}=\frac{E^{0}}{P_{A}}$

which is the same as for s.s.b. Thus we have one important result: when both are properly received, d.s.b. and s.s.b. require the same average signal power for a given signal-to-noise ratio at the receiver. The 9 db. figure we hear quoted so often comes from a comparison based on peak power with full carrier assumed in the a.m. signal THE RANDWIDTH SAVING OF SSR...

IT WON'T REDUCE INTERFERENCE

This last statement must have con-vinced even the most broad-minded reader that the author has gone nonlinear, but bear with me a while longer. In a given bandwidth it is quite true that twice as many s.s.b. clear channels may be assigned as d.s.b. clear chan-nels, which would initially lead one to believe that universal use of s.s.b. would result in less interference than universal use of d.s.b. This sort of argument is used and the sort of argument is misleading because we do not use the Amateur bands on a channel assignment basis. Within the band edges we operate wherever and whenever we wish. So we must discard the "double the number of channels" picture and start with a new and more meaningful approach.

The correct approach to the interference problem on the Amateur bands involves the mathematical theory of the probability Probability theory exters the picture because within the band edges signals appear at random frequently and the probability of the probability of the with random signal strengths. Thus if we consider this "jumble" of signals on the bands as constituting the interference level would be affected if all signals were darb, or any expense interference level would be affected if all signals were darb, or on an average basis is very important and to illustrate my point let me give with sub- or darb has nothing to do with sub- or darb has nothing to do with sub- or darb. with s.s.b. or d.s.b.



Fig. 2. DSB and SSB Signals in Noise

We all know that at times we can do very well with low power and a poor antenna. In spite of this we don't laugh at the fellow who goes to a kilowatt and puts up a rhombic. Why? Well, because we know that on the average because we know that an the average the kw. and rhombic will give better performance than our 6L6-rain gutter combination. In other words we don't judge the performance of a new antenna or a new transmitter on the basis of the one or two hours of operation, but rather we compare the average performance of the new system over a considerable period of time before we come to any conclusion as to fore we come to any conclusion as to whether or not we have made an improvement. This idea of judging performance on an average basis is so simple that it is almost obvious, but don't let this fool you. This way of looking at the situation makes a lot of sense—keep it in mind.

Now let's get back to the s.s.b.-d.s.b. interference question. With the "jun-ble of signals" picture in mind (if some-one questions this concept let him tune some of the crowded phone bands on a busy week-end) what would be the if every signal were s.s.b. instead of d.s.b.? Put another way, if each operator instead of splitting his radiated power equally between two sidebands (d.s.b.) confined all his power to one sideband (s.s.b.), would the average interference level in the band be reduced? The answer is no, the average interference level would remain unchanged! In other words on the average the amount of interference which we would get in our receivers would be the same if everyone were transmitting s.s.b. or if everyone were transmitting d.s.b. The reduced bandwidth of s.s.b. will not reduce interference. (Heterodyne interference, which is such a ser-ious problem now, would be eliminated in either the s.s.b. or d.s.b. case since both are suppressed carrier systems.)

DSB RECEPTION-

SEVERAL POSSIBILITIES

Let's go back a bit and review what has been said so far. To begin with we have shown that if the carrier component of a conventional a.m. signal is removed we have a more basic form of the a.m. signal which we have called d.s.b. Secondly, when d.s.b. and s.s.b. were compared on an average power basis the 9 db. power advantage of s.s.b. vanished. Finally, we showed that due to the random frequency location of signals within a band the reduced transmission bandwidth of s.s.b. did not result in reduced interference. So far s.s.b. and d.s.b. performance has been very much the same. The big advantage of d.s.b. over s.s.b. will show un at the transmitter, but first let us consider the reception of d.s.b.

RECEIVING DSB SIGNALS

An ideal d.s.b. receiver demodulates both sidebands and combines them so that all the transmitted power is used To get the two sidebands to add inphase, however, requires the receiver local oscillator to be phase-locked to the carrier which isn't transmitted This sounds difficult, if not impossible but such is not the case. Phase control under such conditions can (and has) been very simply obtained since car-rier frequency and phase can easily be established from the received sidebands. Let's forget about the "ideal" d.s.b. receiver for the moment and consider a more familiar reception method which although it does not give the best results its use will prove entirely satisfactory.

If one thinks of the d.s.b. signal as two s.s.b. signals back-to-back, the use of s.s.b. receiving techniques immed-iately suggest itself. Of course if we receive only one sideband we are ap-parently losing 3 db. since one-half the transmitted power lies in the other or unused sideband. This other sideband is not being wasted, however, since it is available for use by the receiver when needed. In other words, we may switch from one sideband to the other as the interference situation at the receiver changes, always picking the sideband with the lesser interference.

The ability of the receiver operator to choose between two sidebands and pick the one with a minimum of inter-ference buys back a good part of the 3 db. loss, so much in fact that the difference on the average is not worth considering.

Thus even if a non-ideal reception method such as s.s.b. is employed, d.s.b. transmissions can be received through interference just as effectively as s.s.b. transmissions.

It is quite true that the upper and lower sidebands of an a.m. signal contain the same information but this isn't bad and if properly used, this feature (redundancy, as the communications engineer would call it) will pay handas the communications some dividends. As a matter of fact in modern communications systems we sometimes go to a lot of trouble to put in redundancy by repeating the message in one form or another. causes the transmitted signal to occupy more bandwidth but this repetition gives the receiver a much better chance of getting the message through in spite of interference. The point to be made here is that a.m. has an inherent "diveradvantage over s.s.b.; let's not complain about it but rather we should try to make more good use of it.

D.s.b. transmissions may be received on a standard a.m. receiver by the same methods which permit such a receiver to detect s.s.b. signals. The process requires some skill but it certainly can be done. A better solution involves the use of s.s.b. adaptors of the types Norgaard and others have proposed. These units simplify reception considerably and they make sideband switching a quick and simple matter. The best solution is of course a receiver of adaptor designed specifically for d.s.b. but this matter is beyond the scope of our present discussion.

DSB TRANSMITTERS-THE PAYOFF

The d.s.b. transmitter is far simples to build and operate than a s.s.b. transmitter. The d.s.b. transmitter is simpler even than a conventional a.m. transmitter. Special tricks or gimmicks? No, just the proper combination of some old and well known techniques. No linear amplifiers, no filters, no phasing network, no frequency translators; you can do it yourself. How is all this possible? Well, it's mostly due to the simple fact that we no longer have to generate a carrier. To see how all the ice things come about take a look at

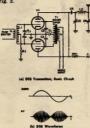


Fig. 3-DSR Transmitter Circuit and Waveform

The final tubes V1 and V2 are beam tetrodes and are operated as screen-modulated class C amplifiers. The plates are paralleled and are connected to the antenna load by means of a pi matching network. The control grids are driven push-pull from a normal r.f. exciter at the operating frequency. The exciter at the operating frequency. The screen grids are by-passed to r.f. by C2 and C3 and are connected to the audio transformer T1. (A normal driver transformer will handle more audio power than will ever normally be required for Amateur service.) The centre-tap of T1 is either grounded or connected to a negative hias supply depending on the tube type and plate

voltage used. Blocking capacitor C4 is used to isolate d.c. from the pi coupler is usual. Now for the operation.
With no audio both tubes are nearly

cut-off by virtue of the fact that the screens are either grounded or biased negatively, thus no output. If we assume a sinusoidal audio tone as the modulating signal as shown in (b), one screen is driven positive during the first half-cycle and the other is driven negative. The tube with the positive screen conducts and r.f. is supplied to the load by that tube. During the next half of the audio cycle the other tube supplies the power and the first tube rests. Note that only one tube is working at any one time, except when there is no audio then both tubes loaf.

Fig. 3 (b) shows the audio and r.f. waveforms. Only one audio cycle is shown. Note further that the r.f. dur-ing the first half of the audio cycle is phased 180° to the r.f. during the secphased leu to the r.I. during the sec-ond half of the audio cycle. This is typical of a suppressed-carrier a.m. signal. Suppose we add a carrier wave to the r.f. wave of Fig. 3 (b). If the carrier wave has the same phase as the r.f. in the first audio half-cycle and an amplitude equal to the maximum amplitude of Fig. 3 (b) the two voltages will add during the first audio half-cycle and subtract during the second half-cycle resulting in the old 100% modulation picture. So the circuit of Fig. 3 (a) residues cuit of Fig. 3 (a) produces a.m. with-out carrier or a d.s.b. signal. A word or two about circuit efficiency

is now in order. Since we are screen modulating, the efficiency will vary from zero at no audio drive to normal Class C efficiency at audio peaks. If an analysis is made the efficiency based on average r.f. power out to d.c. power in will be

for sine-wave audio where nefficiency at the audio peaks which runs about 0.8. The overall efficiency theoretically about 60% with 50% value usually obtained in practice. This may not sound too impressive but let's look a bit further. Note that the efficiency expression involves #/4 and the normal class C efficiency as a product. In a normal a.m. transmitter #/4 is the theoretical efficiency of the Class B modulators and n_m of course is the efficiency of the class C final. Thus the circuit of Fig. 3 (a) will produce r.t. sidebands with the same efficiency as a conventional high-level modulated is so much simpler than a normal a.m. rig is that in Fig. 3 (a) we are not bothering to generate the carrier

The peak power outputs which can be obtained from a given pair of tubes in this service may be estimated taking the carrier output given in the handbook for one tube in class C telephony service and multiplying by four. You can do at least this good and probably better. For example, if a pair of 6146 tubes is to be used we find in the handbook that one tube will give 52 watts of carrier output in class C telephony service at 600 plate volts and 150 screen volts. If we set the high voltage at 1200 volts and run the screens to 300 volts on audio peaks we will get 4 × 52 or 208 peak watts (Continued on Page 11)

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Modifying the AR7 Receiver

PART THREE

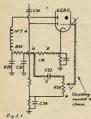
BY G. M. BOWEN,* VK5XU

It is proposed to discuss the installation of two types of noise limiters in this section of the modification scheme. Each circuit has its advantages and its limitations. The choice that you may make will probably be decided by the amount of time—and equipment of course-that you have at your disposal

The shunt limiter using a crystal diode iN34 in the circiut found in the AR.R.L. Handbook is probably the simpler of the two to instal, but is not as efficient in its operation as the double series limiter using a 6H6 or 12H6. The use of the 12H6 is not ad-vised unless you have inbuilt 100 c.p.s. filters in your ears since the cathode is well above earth potential and results well above earth potential and results in quite a fair amount of ac, hum feeding through. This can be improved and the contact potential of the plate-cathode circuit reduced considerably by operating either the 6H6 or the 12H6 on about 4.5 volts and 9 volts respection. tively.

Experiments with the 6H6 have shown that cathode emission ceases where the heater voltage falls below 4 volts approximately. The cathode at this lower temperature doesn't follow the ac. maxima quite so readily and a little experimentation with a series resistor in the heater lead will pay dividends.

Along with others, it was found that the 6H6 or its glass equivalent was better than the later ministure types of double diodes.



* This point is discensected and grounded if a.v.c. is not required on the 6G8G.

INSTALLING A SHUNT LIMITER Installing the 1N34 means rewiring the diode detector section so the diode detector section so that a fixed resistor becomes the diode load instead of the volume control R34. Looking at the original circuit, it will be seen that R36, the grid resistor for the 8G8G, is returned to the junction of R30 and R31. These two form the a.v.c. diode load network; hence with • 78 Portrush Road, Toorak Gardens, S.A.

the decoupling capacitor C34 portion of the a.v.c. voltage is applied to the first audio stage. Anyone wishing to retain the a.v.c. on this stage, and there are advantages in so doing, will simply bring the "earth" end of the volume control potentiometer to the same junc-

The first modification is to rewire R34 and include it into the grid circuit return and replace it with a diode load of 1 megohm. The lead from the decoupling resistor R33 and by-pass condenser C32 is a shielded one passing along the floor of the chassis from the



second i.f. stage to the front panel where the volume control is located C33, the audio coupling capacitor, is placed on solder lugs close to the potentiometer and the return lead for the grid circuit, a shielded one, runs paral-lel to the other one. By transposing these leads on R34 they can still be

At the same time lay another screened lead so that an n.b.f.m. adaptor can be included if required. It is easier to do it at this stage than later on when components are replaced and new ones added.

For the 1N34 shunt circuit, use a double solder lug strip to mount the components. This can then be fixed on small stand-off pillars to the end of the

chassis nearest to the audio control potentiometer. Remove the second phone jack and insert a s.p.s.t toggle switch for "limiter-in," "limiter-out" control Although some Amateurs prefer to

leave the limiter in all the time, there are occasions (like listening to the b.c. band!) when well modulated signals are severely distorted unless the limiter is taken out

With the shunt limiter, screening the input and output circuits from each other doesn't present quite the prob-lems that the double series limiter does. It is also less sensitive to parallel circuit capacitance than the series circuit and so far it has been found slightly better for the long shielded leads required in the AR7.

Without adding the limiter the circuit becomes the one in Fig. 3.1. With the 1N34 limiter "A" and "B" become the points into which the limiter is included and the 1 megohn resistor is removed. Since the shielded leads AX and YZ are already installed the end at X needs only to be lifted and transferred to the input of the limiter

As all the components of the limiter circuit have been mounted on the circuit have been mounted on the solder lug strip attached to the end of the chassis it is an easy move. The audio coupling capacitor, C33, is mount-ed close to the potentiometer on a stand-off pillar and short leads can be used. The output lead from the limiter goes to C33, the earth lead to the nearest point on the chassis, and the two leads to the on-off switch as direct as possible and clear of C33.

It all makes for a very neat and tidy estallation with a minimum of physical alteration.

One word of warning is required.

Note the polarity of the circuit and connect the 1834 into it correctly. If you are not sure and the circuit appears to not be working, try reversing If a 1N34 is not available use a diode

with a very low forward resistance and as high a back voltage as possible. This is necessary because signals will feed both ways if the diode has "had it. This installation made operation on 28 Mc. a possibility in spite of almost continuous auto QRM.

DOUBLE SERIES LIMITER

Eventually curiosity got the better of shunt limiter and instal the latest thing in full wave series limiters complete with threshold control, etc. The components were reefed out and a 6H6 installed on a small bracket attached to the end of the chassis with the socket connections facing the front panel. Since the heater supply was still 12.6 volts and a dropping resistor was need-ed anyhow to reduce the heater voltage to about 4 v., this was attached to a solder lug bracket clear of the components so that the heat could be dissipated without any sad results.



Another hole was drilled in the front another note was arrited in the front panel immediately above the "off" etching to take the limiter on-off switch. The threshold control potentiometer went into the hole marked "phones." (Continued on Page 12)

THE "SNOOP-LOOP"

EVERYTHING ELSE IS TRANSISTORISED-WHY NOT A PORTABLE D.F. LOOP?

BY CLAUDE M. MAER. JR., WOIC

HAVE you ever been up a creek without a paddle? To get to the point, have you ever been hidden transmitter hunting on a night as dark as the inside of a potted power trans-former? If you have, brush the tar out of your eyes and nose and continue

Picture yourself, after taking off at the start of the hunt, heading in the right direction, signal getting stronger and stronger, excitement increasing with each additional S unit on the You're following your loop meter. closely—it's working just as good as a ten-element beam on 20 fed by a water-cooled kilowatt—and now you're getting out of town into the country—



The box containing the desion and in ains the "handle" for WHICE "disa The loss in a convenience but is not tial part of the loop sasembly. The ing capacitor is sever-driver along on-off switch and headphen pack bottom in this view) are the operating

The roads are unfamiliar, and side. The roads are unfamiliar, and the null is beginning to swing rather rapidly, showing that you are getting in close. Whoops—it shifts to give a direction at right angles to the car. You look carefully across the deep direction at into the dark field where you know your cagey buddy is biding. No roads into the field as far as you can see in either direction. You dare not waste miles driving up and down the road looking for an entrance, for each tenth of a mile counts.

You park beside the road, grab your flashlight, and plunge into the veldt in the direction your loop null clearly indicates. But after taking a few steps you're up to your armpits in brush and * Reprinted from "QST," February, 1957.

can't see ten feet forward or backward. You stumble on in hopes of running into the hidden transmitter-you're probably not more than 500 feet from it-but away from your car with its sensitive receiver and amazingly sharp loop it really becomes a hunt for the needle in the haystack. Now do you see what I mean about the lack of a paddle?

After this happened to me a few times, I decided that something had to be done. I had an old loop left over from the early days of transmitter hunting, and it was a simple trick to wire in a germanium diode, capacitor and headphone jack. I was all set—I could leave my car on the nearest main travelled road, walk in to the hidden transmitter, find out how he managed to get in there with his car and-if a helicopter was not necessary-drive right in in tig time.

Well, I tried it at the very next transmitter hunt after bragging quite a bit about my new secret weapon. I reached a very close spot in the car (at least I thought it was close) and started out on foot. Alas, no signal in my phones. I knew it was tuned to frequency because I had checked it earlier in the evening on a nearby mobile. My "weapon" was a dud. Later checking showed that it was good for only about 25 to 35 feet. Not good enough. What

THE SOLUTION?

All sorts of thoughts came to mind but the one that kept recurring was the use of a transistor, one of those supposedly magic devices which will some day replace the trusty old UV-201-A and require only a fraction of the power and voltage. But the trouble was that I didn't know anything about transistors. Also, what do transistors cost? Probably several bucks, which was more than I wanted to put into a device used once or twice a month at most. I was very pleasantly sur-prised to find at my next visit to the radio store that modern production-run transistors cost only about one buck instead of several. So in I iumped picked up two of the little devils and headed for the Handbook.1

Without going into the details, found that transistors are not at found that transmores are not as an difficult to understand if you can keep the names of the connections straight in your mind. I also found that the in your mind. I also found that the one-buck transistors were only good for audio and i.f. service, and that the most gain could be realised from the so-called common or grounded emitter connection.

Although some experts frown on comparing transistors with vacuum tubes, it was very easy for me to visualise the grounded-emitter circuit as being the same as the customary grounded-cathode circuit of the vacuum tube. (My goodness, it wasn't too long



1.- "Snoop-Loop" cir The loop is a single turn of RG-8/U inner conductor, the outer conductor being used as a shield. Note the gap in the shielding; about a 1 linch section of the outer conductor should

be cut out

C1-25 pF. midget air padder C2-0.1 uF. or more (paper). J1-Open-circuit phone fack. S1-S.p.s.t. toggle.

"A" and "B" (chassis ground) refer alternative input circuits shown in Fig. 2.

ago that, as far as I knew, the ground-ed-cathode circuit was the only way to connect up a tube.) It seems that the base acts like a grid, and the col-lector acts like the plate. In order to obtain any appreciable plate—oops, collector-current flow, the base has to be biased with a very small voltage of the same polarity as that applied to the collector. Generally speaking, the audio sensitivity and gain of a tran-sistor stage is dependent upon the amount of base bias—within limits, the greater the base bias, the greater the audio sensitivity of the stage. So far so good

HOW ABOUT THE LITTLE GEM? About this stage in my mental gyrations, I recalled an article in "QST" about the use of a transistor in a field strength meter.² This struck a familiar note—wasn't a field strength meter just what I wanted for tracking down these wily boys hiding in the bulrushes? I hurriedly located the Little Gem in the measurements chapter of the Hand-book,3 and looked at the diagram. It



Fig. 2.—Input circuits for lower freque bands.

I should cover the band, but the L/C ratlo is incuit at the left, adjust to ap on LI for maximum significant at the right is for if low impedance it uned class. ratio is not critical. adjust the position at the right is for use with impedance line between the circuit Li-Cl. As an alternative coupling shown, the line on Li.

and "B" connect to corresponding ated points in the circuit of Fig. 1, su ag for the loop and Cl in that circuit.

2 Campbell, "The Transistorised Little Gem',"
"QST," August, 1955.
3 "The Radio Amsteur's Handbook, 33rd
edition. 1956, page 503.

took me a while to enteh on to the took me a while to catch on to the metering balancing circuit, but I really got haffled when I looked at the base circuit. Look, Ma, no bias. How come?

This puzzle took a few days of speaking in a thought now and then during ing in a thought now and then during luils at the office, and then a cryptic note in the Handbook description began to sink in whe transistor is used in the common-emitter arrangement connected so that the rectified de from the crystal flows in the base-emitter the hias comes from. A little more thought showed me that this was the correct connection for the immediate if the meter were to read relative signal strength, because when a fixed bias is annlied to the base circuit the average collector current remains more or less constant for all signal levels. Of course, the instantaneous current will vary with a.c. input so that an audio signal will come through and be amplified

Right there I had to make a decision. Did I want to use a meter or head-phones? For a number of reasons I chose the headphones. In the first place, the trouble I was trying to overcome was lack of sensitivity in my portable loop. I reasoned that the time you need the most sensitivity is when the signal is weak, and with the Little Gem circuit there is less bias on the base with weak signals (remember the Little Gem gets its bias from rectifying the incoming signal) and thus the least sensitivity at that time. Thus, it seemed to me that the signal-biased circuit was not what I was looking for. In addition.

cause there is modulation on the signal at all times and the modulated signal comes through fine

After doing the thinking for a week nect in my transistor audio stage and I had a real secret weapon, the "Snoophand I can read signals up to one mile under good transmitting conditions. even in the thick woods a quarter of a mile is duck soup. I believe that a half mile can be said to be the working range of the device.

It's a good idea to check out these distances carefully, before you make the mistake I made one night. When first testing it out on a hunt, I stepped out of the car to see if I could hear there was a weak signal in the phones I had become used to using the loop with only the diode detector, and in the excitement of getting in close forgot about the greatly increased sensitivity
I had built in. I rushed off down the road on foot following my Snoop-Loop. and about one mile later at the top of a high hill I stumbled onto the hidden site. Boy, I still have scars from the blisters on my feet! As it turned out we could have driven on the main road to within 500 or 800 feet of the site and then my little loop would have led us into the location which could not be seen from the road. In that case a meter might have been helpful, but you can learn the relation of audio with a little practice.



n is very simale, a lar siris providing wiring winels for most of the parts. The two peplité celle Are wrapped with tape and supported by leads soldered to the terminals.

the use of a meter requires a light on the meter face when it is being read. and three hands are needed to hold the loop, a separate meter case and light. At the same time you want to keep a sharp lookout where you are walking and, most important, for the hidden transmitter itself. Even if a battery-operated pilot light were to be installed, meters have to have a balancinstanted, meters have to have a balancing circuit and tend to jiggle when carried. Also, they will go off scale when getting in close, and I hated to think of my nice surplus 100 microampere meter winding its needle around the peg. As it turned out, the headphones have been very satisfactory for the

In localities where the signal from the hidden transmitter is unmodulated the meter circuit will have to be used. The Little Gem should work quite well but some means should be included for reducing sensitivity to keep that meter pointer straight. Sometimes, detuning the input circuit will do the trick, but if the only tuning is in the loop circuit itself, detuning may cause some strange

CONSTRUCTION

Fig. 1 shows how simple the unit really is. Almost any size box can be used, but I happen to be one who does not like to burn his fingers trying to solder connections in small places, so

I chose a medium-sized aluminium case, 4 x 2½ x 2½ inches. Any equival-ent hox will suffice and leave plenty of soldering room.

The loop is constructed of RG-8/U is used for convenience and ease of mounting, one end of the co-ax loop is connected to a male plug in the conventional way, but the centre conductor of the other and is shorted to the shield so that the male connector at that end has no connection to the centre prong. This results in an unbalanced circuit. but seems to give good bidirectional readings as well as an easily detectable maximum reading when tectable maximum reading when the grounded end of the loop is pointed in the direction of the transmitter. Care-ful tuning will improve this maximum reading as described in an earlier article



Fig. 2.—The "Little Gem" metering circuit, for use with unmodulated signals. Other com-ponents same as Fig. 1.

Placement of parts can be seen in the photographs. Be sure to insulate the headphone tack from the case because both connections are above groundthree volts worth (no danger of any serious shock!). Also, don't forget to remove one inch of shielding from the top of the loop. You won't get much signal unless you do.

The Snoop-Loop is not limited to the ten metre band or to a built-in loon Fig. 2 shows alternative circuits for other bands and for plugging in a sep-arate loop connected by a low imped-ance transmission line. Select coil and capacitor combinations that will tune to the desired frequencies. Plug-in coils could be used. It is a good idea to have the r.f. end of the unit fairly well shielded, to eliminate signal pickup except through the loop. Incidentally, sensitive high impedance phones Snoop-Loop. I use a single hearing aid button type with 8,000 ohms impedance and 2.000 ohms d.c. resistance.

Fig. 3 shows the Little Gem connection for using a meter in place of the headphones.

I don't know if this little loop will be as helpful to you as the paddle we originally talked about, but it sure helps on a dark night in the country. (Tip to the hidden transmitter operator: If you want to foul up some of your pals using these loops, just hide near the transmitting antenna of a 50,000 watt broadcasting station. But that's another story)

4 Amphar, "Unidirectional Loops for Transmit-ter Runting," "QST," March, 1955.

5 Duncan, "Transmitter Hunting—Scattle Style,"
"QST," March, 1985; Norberg, "Transmitter
Hunting with the D.F. Loop," "QST," April,

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Page 8

VK-ZL DX CONTEST, 1957

Phone-1000 GMT, Saturday, 5th October, to 1000 GMT, Sunday, 6th October CW- .. 12th 13th

N.Z.A.R.T. and W.I.A., the National Amateur Organisations in New Zealand and Australia, invite world-wide participation in this year's VK-ZL DX Contest

Objects: For the world to contact VK and ZL Stations and viceversa.

When?: Phone-24 hours from 1000 G.M.T., Saturday, 5th October, to 1000 G.M.T., Sunday, 6th October

C.W .-- 24 hours from 1000 G.M.T., Saturday, 12th October, to 1000 G.M.T., Sunday,

13th October. Duration for all contestants is 24

RULES

hours

- 1. There shall be three main sections to the Contest-
 - (a) Transmitting Phone.
 - (b) Transmitting C.W.
- (c) Receiving-Phone and C.W. The Contest is open to all licensed Amateur transmitting stations in any part of the world. No prior entry need be made. Mobile Marine or other non-

land based stations are not permitted to enter the Contest. 3. All Amateur frequency bands

may be used, but no cross-band operating is permitted. C.W. will be used for the second week-end and Phone for the first week-

end. Stations entering for both Phone and C.W must submit entirely separate logs for each. 5. Only one contact per band is per-mitted with any one station for Con-

test purposes . Only one licensed Amateur is

permitted to operate any one station under the owner's call sign. Should two or more operate any particular station, each will be considered a competitor, and must submit a separate log under his own call sign.

7. Entrants must operate within the terms of their licences

Cyphers' Before points may be claimed for a contact, serial numbers must be exchanged and acknowledged. The serial number of five or six figures will be made up of the RS (telephony) or RST (c.w.) reports plus three fig-ures which may begin with any num-ber between 001 and 100 for the first contact, and which will increase in value by one for each successive con-tact, e.g. if the number chosen for the first contact is 053, then for the second contact the number must be 054, for the third 055, and so on. If any contestant reaches 999, he will start again with 001

9. Entries must be set out as shown in the example below, using one side of the paper only. Entries must be post-marked not later than the 31st October 1957, and addressed to the Federal Contest Committee, W.L.A., Box 1234K, G.P.O., Adelaide, South Australia.

10. Scoring: For VK-ZL Stations only-Five points will be scored for each contact on a specific band with an overseas station, and in addition for each new country worked on that band a bonus of 20 points will be added the purpose of this rule the official countries list will apply with the exception that each VE, W, and ZS call area will count as a separate country.

For Overseas Stations—Five points will be scored for each contact on a specific band with a VK or ZL call area (ZLI, 2, 3, and 4; VKO (zero), 1, 2, 3, 4, 5, 6, 7, and 9), and in addition for each new call area worked on that band a bonus of 50 points will be added.

11. Logs submitted by overseas contestants should be set out as shown in this example. (VK and ZL entrants will modify their logs accordingly.)

VK-ZL DX Contest, 1957 Page I

Name Section Call Sign Address

Claimed Scores: Total Band Scores: 80 Metres 48

20 15 11 10

Tx Input Power Aerial(s) Declaration: I hereby certify that I have operated in accordance with the rules and spirit of the Contest.

Signed ... Date

12. The right is reserved to disqualify any entrant who, during the Contest, has not observed regulations or who has consistently departed from the accepted code of operating ethics.

13. The ruling of the Federal Con-test Committee of the W.J.A. will be final. No dispute will be entered into.

14. Awards-

(R) VK-ZL Stations. - The W.J.A. will award certificates to the top scorer on each band and the top scorer in each VK and ZL district. Additional certificates may be awarded depending on the number of logs received.

(b) Overseas Stations.—Certificates will be awarded to the highest scorer in each country (each call area in VE, W and ZS). Additional certificates will be awarded depending on the number of logs received, e.g. to the high scorers on different bands and to place winners where scores are exceptionally high.

RECEIVING SECTION

1. The rules are the same as for the transmitting section, but it is open to all members of any Short Wave Listen-ers' Society in the world. No trans-mitting station is permitted to enter this section

2. The Contest times and logging of stations on each band per week-end are as for the transmitting section.

 To count for points, logs will take the same form as for the transmitting section but will omit the serial number received. Logs must show the call sign of the station heard (instead of "worked"), the serial number sent by it, and the call sign of the station being Scoring will be on the same basis as for transmitting stations. It is not suf-

ficient to lor a CQ. 4. VK receiving stations may log

overseas and ZL stations, while ZL receiving stations may log overseas and VK stations.

5. Certificates will be awarded to the highest scorers on the same basis as for the transmitting stations.

VK-ZL DX Contest, 1957 Page 2

Date Oct.	Band Mc.	Time G.M.T.	Station Worked	Serial Sent	Serial Received	Points Claim.	Bonus Points	(Leave Blank)
5th	14	1054	VK2XYZ	57001	54027	5	50	
1	14	1100	VK3ABC	54002	44131	5	50	
ì	14	1110	VK3AXQ	46003	57008	5	-	
1	21	1220	VK3AZX	58004	56045	5	50	
	21	1230	ZL2XYZ	56005	57152	5	50	
	21	1257	ZL2ABC	55006	45013	5	_	
	21	1315	VK9XY	57007	58141	5	50	
	21	1405	VK9AB	59008	59016	5	_	
	TOTAL (Points Claimed + Bonus Points) 40 + 250 = 290							

[Contestants are requested to maintain "sent" serial numbers in the correct sequence and not to divide their logs into bands.]

The Evils of Multiband Antenna Systems -And the Cure

BY LEWIS G. McCOY, WIICP

A LOOK through "The Radio Amateur's Handbook" of ten years
years ago will show that there
was only one commercial transmitter
using the pi-network output circuit.
However, the 1937 edition of the Handbook shows that pi networks are the would be safe to say that over 90 per cent of store-bought transmitters use this type of output circuit.

Why the trend to pi networks? The answer is simple. The pi network lends answer is simple. The pi network lends triself readily to compact band-switching transmitter design. It means the elimination of plug-in coils, and this is exactly what the average Joe Ham wants. He may never operate anything but 40 c.w., but he still likes to know that all it takes is a flip of the switch to put him on another band. He also has heard that a pl network is an ex-



This unit is the 40 metre band-pass filter. The shield between the two filter sections is a piece of aluminium, slightly narrower than mit width of the bex.

cellent circuit to prevent harmonic radiation and is just what he needs recompletely true. A pl network is no better than the "old-fashioned" parallel tuned, link coupled circuit. In fact, an extra the properties of the properti

of course suggests the use of co-as feed line of that impedance. If you have a multiband transmitter it naturco-ax ally follows that you want a multiband antenna that is coax fed. This desire has led to the development of trap antennae and multiple dipoles! fed with a single co-ax line. No one wants an antenna coupler between the transmitter and the feed line because this will mean additional adjustments. Right here is where we run into troubles. *Reprinted from "QST," March, 1987 1 Berg, "Mulithand Operation with Paralleled Dipoles," "QST," July, 1985; Greenberg, 'Simple Trap Construction for the Multi-hand Antenna," "QST," October, 1986.

· Just when you're happy as a • Just when you're happy as a lark with your multiband an-tenna, seene guy will come along and tell you what's wrong with it, as WHCP does in this article. But he doesn't stop there; he shows how easy it is to correct the elimation

A multiband antenna is exactly what the term implies; it is good for more than one band. If we put an 80 metre signal into the antenna the signal will be radiated. If that 80 metre signal has a 40 metre harmonic our multiband antenna is going to accept and radiate antenna is going to accept and radiate the harmonic as well as the funda-mental. (Have you heard from the P.M.G. lately?) If the antenna were an 80 metre job only it would be resonant at 80, but it would still be capable of accepting and radiating any harmonic (3rd, 5th, 7th) energy.

This leads up to another question: How much harmonic signal can we tolerate? The P.M.G. is quite specific in its definition of our rules on this point. All spurious signals must be attenuated to a point where they will not cause interference to other services It is extremely difficult to apply exact figures on harmonic content in a transmitter-there are too many factors that get into the act to foul up our calcula-tions. However, let's make a few assumptions to illustrate what one can expect in harmonic attenuation.

THE DECIBEL

In discussing attenuation of harmonics we use the relative power unit called the decibel (abreviated "db." and pronounced "dee bee"). You'll and pronounced "dee bee"). You'll hear the term db. a lot in your Amateur career, so it would be well to become familiar with it. To familiarise yourself with power gains and losses expressed in db., look at Table 1. You



C1. C2. C3. C4-3.5

J1, J2-R.C.A. type phono jacks. Li, L3-3.5 Mc.-12 turns No. 18, 1 inch diam., 8 tp.1

8 t.p.:
7 Mc —12 turns No. 18, %
5 t.p.i.
14 Mc —10 turns No. 18, % inch diam. 16 Mc.—10 turns No. 18, ½ inch diam... 21 Mc.—7 turns No. 16, % Inch diam... 28 Mc.—7 turns No. 16, % Inch diam... 28 Mc.—7 turns No. 18, ½ inch diam... (Eight lengths of coil stock are required for sch filler.)

can see from the table that if you had a power increase of "10 db," it would be the same as a power increase of 10 times. If we had a harmonic reduction of 20 db,, the harmonic power would be decreased to 0.01 of its original or comparison value

Getting back to our discussion of tank circuits and multiband antennae, let's assume for the moment that our sec-plifier is properly funed, and our sec-ond harmonic is down 30 db. from the fundamental. This is a reasonable figure and about what we can expect in the average tank circuit. It does not take average tank circuit. It does not take into consideration any stray harmonic coupling that might be present in the transmitter. A giance at Table 1 hind; the power ratio of 0.001. With a 100 watt signal, the second harmonic would be 0.1 watt if the harmonic reduction was 30 db. Many Amateurs would say a 0.1 watt signal institution of the power of the pow trouble. Well, let's look at the record

Db.	Power Gain	Power Reduction
10	10	0.1
20	100	0.01
30	1,000	0.001
40	10,000	0.0001

Table 1. Power gain and reduction factors.

Recently, Annateurs have been experimenting with transistor rigs using pour the state of the water of the wat

One of the better methods for finding out if you are radiating unwarded signature of the control One of the better methods for finding rig is clean. If there are unwanted signals present, then obviously you signals present, then obviously your must eliminate them if you're going to avoid notices from the P.M.G. If the signal several hundred yards away is barely detectable above the noise level it isn't worth worrying about, but a solid S5 or S5 signal is just cause for DESCRIPTION

THE HALF-WAVE FILTER

A simple way to obtain the necessary attenuation is with a half-wave filter A filter of this type installed in the feed line will permit any signal within the band to reach the antenna, but signals above and below the band are atten-uated. Thus this type of filter protects against both harmonics and undesired low frequency signals. The protection against harmonics is always good; the protection against undesired low freprotection against undesired low fre-quency signals is something of a variable with different transmitters and antennae

Harmonic attenuation with this filter is approximately 30 db. for the second, 50 db. for the third, and 60 db. for the fourth, increasing with each harmonic. The filter will eliminate the need for the customary low-pass t.v.i. filter, and thus the band-pass filter does double duty for us. The drawback, and it is not a serious one, is that a separate filter is needed for each Amateur band. The simplest way to operate with the filters is to build one for each band and equip the filters with phone type jacks. Then the feed line can be quickly plugged into the proper filter.

It is impractical to switch filters for each band for one very good reason.
The purpose of the filters is to stop unwanted signals from reaching the antenna. A switching arrangement would necessitate switching the input and output leads to the filters and it would be very difficult to prevent har-monic leakage around the switch. That is why we suggest plug-in filters. It only takes a second to change the feed line to the correct filter. Incidentally, the filters described here will work with either 50 or 75 ohm co-axial cable.

CONSTRUCTION

Before starting construction study the photograph and Fig. 1. Each filter consists of two coals and four mica capacitors mounted in a 21 x 5 x 21 inch aluminium box. However, if one wishes to save on chassis costs, the filters can be enclosed in coffee cans or any other metal enclosure that will provide good shielding

The coils are self-supporting, and a rubber grommet should be used in the shield wall to prevent the coil wire from shorting to the chassis. A solder lug should be mounted each side of the shield wall immediately below the shield wall immediately below the grommet hole. All the ground leads from C1, C2, C3 and C4 should be soldered to these lugs. The leads from C2 and C3 to the coil wire should be kept as short as possible and connected the state of the coil wire should be set as possible and connected the coil wire should be coil wire should be coil wire should be coil wire should be coil with the coil wire should be coil wire to the wire close to the shield wall.

OPERATION

There are a few important points to remember when using the filters. The standing wave ratio, not much more than 2 to 1. A high s.w.r. may cause excessive voltages to develop across the components in the filter, and in such a case the filter might be ruined. When changing bands, remember to change the filter first. Otherwise, you'll be almost sure to burn out the filter. With the component values listed in Fig. 1, the filter is capable of handling a 250 wat transmitter. One can readily see that this type of filter is the simple answer to harmonic attenuation and protection when using a multiband antenna system.

SINGLE SIDEBAND:

IS IT REALLY BETTER THAN AMPLITUDE MODULATION?

(Continued from Poge 3)

output. This you know you can do because the voltages and powers quoted are those which exist in class C telephony service during modulation peaks Without getting into too much circuit detail or d.s.b.-linear amplifier power comparisons this much is clear; the class C amplifier with its ability to put large amounts of peak power ideally suited for voice service in the circuit of Fig. 3 (a). The average voice sideband power produced by a pair of tubes in d.s.b. service will easily match the average voice sideband power produced by the same tubes in s.s.b.linear amplifier service.

The above power discussion actually underplays an important advantage of d.s.b. over s.s.b. In d.s.b. or standard a.m. systems voice clipping and filterif properly done, can increase ficantly the average sideband significantly power output of a given transmitter. Such tricks cannot be used in s.s.b. since a flat-topped wave is deadly to an s.s.b. system. (Such a waveform results in a very high peak-to-average power ratio for the s.s.b. signal.) Do not confuse peak clipping with the peak limiting or audio a.g.c. tricks that are sometimes used in s.s.b. designs. These are defensive measures which in effect permit the audio peaks to fully load but not overload the linear r.f. ampli-The average power gain of d.s.b using a good clipper-filter over a.s.b. I'm willing to settle for a draw A few final comments: The r.f. ex-A few final comments: The XI. ex-citation in da.b. service is not at all critical. Adjust for normal phone drive and you've got it made. That is one reason why screen modulation of tetrodes is to be preferred over con-trol-grid modulation of triodes. You can use triodes but you have to watch the ratio of audio voltage to r.f. voltage. With the tetrodes you just read the grid mills. The r.f. exciter of course is normal-use the one you've got. One is normal—use the one you've got. One more thing—we said that only one tube works at a time. This is true except that the "off" tube acts as a neutralising capacitor for the "on" tube. The circuit is self neutralising

can be considerable but for the moment

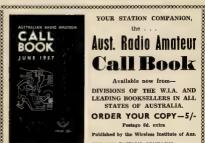
since the grid-plate capacitance of the "off" tube is in just the right spot for CONCLUDING REMARKS

grid neutralisation.

I would not like to oversell d.s.b: it won't perform miracles. However, when compared with s.s.b. we may draw the following conclusions:

- S.s.b. has no power advantage.
 S.s.b. will not reduce interfer-
- 3. S.s.b. is much harder to gener-

That's the end of my story, which is a good thing because I can see them coming for me now.



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- making more than three thousand amendments since the 1954 edition,
- · DX Countries. Prefixes and their Zones. \$eeeeeeeeeeeeeee

EASY WAY TO GET DY CERTIFICATES!

BY "CANDIDIES"

Gone are the days when it took hard work to get real DX. There is now a system so radically different, so won-derfully simple, that the Amateur transmitter finds himself asking, "Why transmitter finds himself asking, "Why hasn't somehody thought of it before?" But, then, it's been the same with every invention which has been of benefit to humanity. The bright boy who thought of nutting a crinkle boy who thought of putting a crinkle in hairpins, the unknown genius who invented the water closet—humanity owes them something. And now, radio owes a debt of gratitude to those who have evolved this simple method of getting DX

This new system works. It has been tried out on the 20 metre band with rocked, those privileged to hear the system in operation. It has a formula which is even simpler than that of Ohims Law, which, as some radio entusiasts know, is a very easy formula to master

The simplified DX Formula is:- $\frac{A+B}{B} = DXCC + QSL$

- where A = an Amateur Radio Station in Indo China (or anywhere else).
 - B = an Amateur Radio Station in Algeria (or anywhere C = An Amateur Radio Station in Australia.

The formula is worked this way-The formula is worked this way—
A hears B but very faintly and, an
A hears B but very faintly and, an
B does not hear A at all well, but
Coviously suspects that someone is
calling him. C, down under in Austracalling him. C, down under in Austrabis-hearted Aussie, he steps into the
breach. He calls them bods. A then
calls C who, in turn, calls B, who goes
gives him all the gen from B. And
so it went on.

A couldn't hear B. Neither could B hear A. But they could both hear the enterprising C, who fed each with details about the other.

The naive part of this infernal triangle was that A and B promised not only to QSL C, but to QSL each other! A and B both got cards; but neither had heard a peep out of the other. It opens up a pretty problem which only a legal gentleman could solve, and that could become expensive

Yet this is a good system. It gets results. I now have a working arrangement with a big-hearted Amateur who lives not far away, and whose transmitter has a kick like two tons of coal

If this system grows we might see a special certificate for "VERIFIED TMACINARY CONTACTS WIA A THIRD STATION" Such an assert will be easterly sought by those who have faith in this new system. There will, of course, be difficulties, especially in the telephony hand, but difficulties are but a challenge to the Amateur who has the right enirit

C.D.E.N. NEWS

One of the mot heartening pieces of news which emerged from the Federal Convention which emerged from the Federal Convention Convention of the Convention of

gency purposes.

The benself of members, current list of C.D.E. Property of the control of the c

VKS—F. Noisn (VKSFN).

Anticipation of an emergency and prewarning of the Control Station and Network generally will often mean the difference between success and failure.

bort story to be more to publication y publication y publication y publication or publication of the publica

Thanks to the courtersy of the Commandar f the School, your Federal Co-ordinator we ble to address all assembled and outline the activates part and present activities. He was iso able to outline our future proposals an odicate the Amateur's place in the who

MODIEVING ART RECEIVER (Continued from Taxe 8)

The few resistors and capacitors were wired across and around the socket, isolating as far as possible the input and output circuits. Minimum capacitance to earth and complete isolation of input from output leads is the secret of success.

Data issued by the Hallicrafters Company for modifying the noise lim-Company for modifying the noise lim-iter in the SX28 stresses the need to have the double diode, 6AL5, as close as possible to the detector diodes. All as possible to the detector diodes. All circuits including this type of limiter seem to include a separate 6H6 or 6A1.5 as audio detector and a.vc. rectifier. I suspect that any lack of real success with this type of limiter in the AR7 may be due to the long leads and the use of the diodes in the 6G6G for detection etc It does work but not really as well

It does work but not really as well as it should If it can be tolerated, leave the limiter in all the time, set the threshold by fixed resistors, mount the 6H6 immediately above the last if.t. and get as short leads as possible.

Ground the cathode of the 6G8G and Ground the cathode of the 6036 and return the grid through the volume control to the a.v.c line as shown in Fig. 3.1 for some fixed bias. Large signals will give higher bias and thus some measure of control over distortion will be achieved

OVERSEAS AWARDS "SHORT WAVE MAGAZINE" AWADDE

Cards, from overseas claimants only, need NOT be sent with the original application, which must, however, include a fall cheek worked—to justify the claim. From the cheek worked—to justify the claim. From the cheek list, all or any cerds may be called in for scrutiny, or details asked for in relation to particular contacts.

In no case can a Certificate be issued without proofs, or evidence considered good and sufficient that the claimed contacts have been

From overseas applicants (only) claims dul certified by the headquarters of the Amsteu Radio organisation for the country concerns can be accepted. All overseas claims must be accompanied by five LR.C's

WORKED ALL GM AWARD WORKED ALL GM AWARD
The Aberdean Amaleur Ratio Rocket is now
with a substitution of the control of the control

VA-JF CERTIFICATE

VA-JF CERTHFUATE
The Richmond (Virginia) Amstaur Radio
Club is issuing the VA-JF Certificate in connection with the 1857 Jamestown Festival
which will be opened in April next to commemorate the 350th Anniversary of the first
permanent English Settlement in America in

To claim the award, Amateurs must submit QSL cards confirming two-way contacts with twenty-five different stations in the Common-wealth of Virginia during the period January 1 to December 31, 1957. Claims should be addressed to the Richmond

* Reprinted from "Break-In," January, 1967, with medifications.

drapped from a great height. When I hear some choice DX all I have to do is to give him a call and he does the rest. I get the cards and he gets the fun Vou can't losel

REACH





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VALVE DATA

6AV6

TWIN DIODE, HIGH-MU TRIODE

The Radiotron 6AV6 is a miniature valve containing two diodes and a highmu triode in one envelope. The triode section is suitable for use in television and am radio receivers as an audio amplifier; and the diodes for use in television receivers for such a purpose as an age, clamp, and in am radio receivers as a detector and an a.v.c. voltage rectifier.

Base: 7 pin miniature.

Socket connections Pin 1-Triode Grid. Pin 2-Cathode.

Pin 3-Heater. Pin 4—Heater.
Pin 5—Diode Plate No. 2.
Pin 6—Diode Plate No. 1.

Pin 7-Triode Plate.

Electrical Data Heater Voltage 6.3 volts

Heater Current 0.3 amp. TRIODE UNIT AS CLASS A1

AMPLUEES

Maximum Ratings:

Plate voltage 300 max. volts Grid voltage, positive bias value 0 max. volts Plate dissipation 0.5 max. volts

Peak Heater-Cathode Voltage: Heater negative with

respect to cathode 90 max. volts Heater positive with

respect to cathode . 90 max. volts Characteristics Plate voltage 100 250 volts Grid voltage -1 -2 volts

Plate resistance 80000 62500 ohms Amplification Fac-100 100 Transconductance .. 1250 1600 #mhos

Plate current 0.50 1.2 Ma DIODE UNITS

Maximum Rating:

Plate current (each unit) 1.0 max. Ma.

The two diode plates are placed around a cathode, the sleeve of which is common to the triode unit. Each diode plate has its own base pin. Diode biasing of the triode unit is not recommended.

		90	Mc.	W.A.S.			ı
		Cer.	Add. Cntr.	Cult	Cer.	Add.	ı
		13	4	VARAEZ.	. 10	1	
	_	8	3	VK3XA .	. 22	1	L
٠		9	3	VX3GM	. 13	1	
		- 3	3	VICAACI.	. 14	1	•

Call		No.	Cntr.	Call	20. I	Catr.	
VKNWJ		13	4	VARAEZ.	. 10	1 4	
VESPG		8	3	VK3XA .	. 22	1	
VX2VW	-	9	3	VK3GM .	. 13	1	
VK4RY	_	- 2	3	VKIACL .	. 14	1 1	
VK4HR		- 4	2	VKXZD -	. 16	1 1	
VESIC	-	1	1	VERNO .	. 17	2 E	
VKEDW	,	- 3	1	VX2ABC			
VK3RR	101	- 8	1	AKTARH .	. 15	Ł	
VKSHT	-	7	1			- 1	

6BQ6GTB/6CU6

REAM POWER VALVE

The Radiotron 6BQ6GTB/6CU6 is a beam power valve designed for use as a horizontal deflection amplifier in

television receivers.

This valve has a maximum peak positive-pulse plate voltage rating of 6000 volts (absolute), a maximum peak negative-pulse plate voltage rating of 1250 volts, and a maximum direct plate voltage rating of 600 volts. These voltage rating of 600 volts. These ratings, in addition to a plate dissipation of 11 watts and a grid No. 2 input of 2.5 watts, enable a single valve in a suitable circuit to deflect picture tub having diagonal deflection angles of 90°

Base: Octal.

Socket connections:

Pin 1-No connection. Pin 2-Heater.

Pin 3—No connection. Pin 4—Grid No. 2. Pin 5—Grid No. 1. Pin 7—Heater. Pin 8—Cathode, Grid No. 3.

Cab-Plate.

Elimetrical Data

Heater Voltage 6.3 volts Heater Current 1.2 amps. Class Al Amplifier* Transconductance

6000 umhos (* with plate volts 250, grid No. 3 volts 150, grid No. 1 volts —32.5)

HORIZONTAL DEFLECTION AMPLIFICE

For operation in a 625-line, 25-frame system.

Maximum Ratings: Direct plate voltage 600 max. volts Peak positive-pulse plate voltaget (absolute max.) 60006max, volts negative-pulse Peak 1250 max. volts

(screen) voltage 200 max. volts Peak eak negative-pulse grid No. 1 voltage 300 max. volts Cathode current: 400 max. Ma. 112.5 max. Ma. Peak 2.5 max, watts

Grid No. 2 input Plate dissipation? 11 max. watts Peak Heater-Cathode voltage:

Heater neg. with respect to cathode Heater pos. with respect to cathode 200 max. volts Heater 200 max. volts

Bulb temperature (at hottest point) 228 max. °C. Maximum Circuit Value:

Grid No. 1 circuit resistance 0.47 max. megohm

*The duration of the voltage neutron exceed is per cast, of one horizontal assuming cycle. In a SET-line, SE-trame cyclem, is per cast, of one horizontal assuming cycle is 10 micro-seconds approximation continued in the second specific and the second continued assuming cycle is 10 micro-second specific products of the second continued to the second continued to protect the tube in the absence that the second continued to protect the tube in the absence that the second continued to protect the tube in the absence that the second continued to protect the tube in the absence that the second continued to protect the second continued to the second con of excitation.

The d.c. component must not exceed 200 volts.

6BO7A

MEDIUM-MU TWIN TRIODE

Radiotron 6BQ7A is a medium-mu twin triode of the 9-pin miniature type. This tube has high transconductance, low input capacitance, low input loading and low plate-to-cathode capaci-tance. These features make the 6BQ7A especially useful in the direct-coupled r.f. stage of television receivers utilising a driven r.f. grounded-grid (cascode) amplifier circuit. Use of the 6BQ7A in such circuits provides a reduction in noise with resultant improved receiver consitivity Base: 9-pin miniature.

Socket connections: Pin 1—Plate of unit No. 2.

Pin 2—Grid of unit No. 2. Pin 3—Cathode of unit No. 2. Pin 4—Heater.
Pin 5—Heater.
Pin 6—Plate of unit No. 1. Pin 7—Grid of unit No. 1. Pin 8—Cathode of unit No. 1.

-Internal shield. Electrical Bata Heater voltage 6.3 volts Heater current 0.4 amp.

AMPLIFIER-CLASS A

(Values are for each unit) Maximum Ratings:

Plate voltage 250°max. volts Plate dissipation 2 max. watts Cathode current 20 max. Ma. Peak heater-cathode voltage: Heater neg. with respect to cathode 200°max. volts

respect to cathode 200 max, voits respect to cathode 200 max, voits Under out-off conditions, in r.f. grounded-grid circuits with direct-coupled drive, it is permissible for this voltage to be as high

Characteristcs: volts 220 ohms 39

6100 ohms

Plate resistance Transconductance umhos Ma Plate current ... Grid volts (approx.) for plate current of 10 uamp. -10 Typical Operation in Push-Pull B.F. Grounded-Grid Circuits: Plate voltage volts

Grid voltage obtained from Rk -2 volts Cathode resistor (common to both units) ohms Ma Plate current

Typical Operation in R.F. Grounded-Grid Circuit with Direct-Coupled Drive:

Unit No. 1 (driver tube) is directly coupled with Unit No. 2 (driven r.f. grounded-grid amplifler tube) Plate supply voltage Plate voltage 250 250 volts 135 115 volts Grid voltage - volt

0.5 megohm Grid resistor 10 10 Ma. Grid voltage (approx.) for plate current of ---15 -- volts 10 uamp.

heater-cathode voltage: heater negative with respect to

cathode Maximum Circuit Values (Each Unit) Grid-circuit resistance 0.5 max. megohm

1 250 volts

AMATEUR CALL SIGNS

FOR MONTH OF MARCH 1957 NEW CALL SIGNS

Autaretica NG-J. Goodspeed, Mawson. New South Water 2GJ-J. G. Virtue, Dangar Street, Pilliga, 2JG-N. S. Hill, "Montague," Riddall St. Manly, 2ABK-K. L. King, Honour Street, Lawann, 2ANT-Tamworth Hadio and Electronics Club, Peel St., Tamworth, 3AOL-M. S. Latham, 183b Hunter St., Glen Innes.

-- W. O. Hill, 15 Morgan St., Petersham.
S. W. H. Fairbairn, 8 Lemnos Pde.

S. W. E. Newcastle. Newcastle.

Victoria

31A—K. H. Gee, 23 Pope Raad, Blackburn.

31F—J. C. Batchler, 14 Simpson St., Kew.

3AOM—G. W. Baty, 19 Beallba Rd. Caulfield.

3AUK—W. Woad, 60 Vincenta Ave., St. Albanz.

3AWK—W. H. Kerr, 17 Jasper St., Noble Park. Queensland 4AD--A. M. Micra. 9 Bellyte St. West Bundalineg. Vance, 3 Leeson St., West Bundaberg. entral Technical College, George St.,

4DR-L. G. England, 19 Kentlworth St., Mac-key, 4TA-C. T. Amoore, 45 Minimine St. Stafford C. T. Amoore, 45 Minimine St., Stafford.
B. M. Byrne, 118 Central Ave., Indocroophy
Seuth Australia
D. Boott, C.o. Messafay, Box 25. Buile
J. E. Staliard, 27 White Ave., Lockleys.
R. L. Umbarger, C.o. P.M., Alice Springs.
J. E. Johnston, 63 Ninth Ave., Josian.
B. A. Endersbee, 15 Holme Ave., Lower

SZDF-R. A. C. V. Rd., Enfield. Washington, 94 Matn North

Western Australia

8TM-F. Wiseman, C/o. W E. Milward, Barraghup, via Pinjarra.

Territory of Fapus-New Guinea

9MK-M. J. Kopunek 'Rev', Catholic Mission,
Kavleng, New Ireland, T.M.O.

CHANGES OF ADDRESS

ww. New South Wales A Waldock, 31 Andrew St., Lithgow. L. Nye, 34 Merremburn Ave., Narem-2YY/T Sydney Technical College, North Sydney Technical College, Pacific Highway, ore Hill.

H. Lambert 710 Windows Rd Gabriel, 107 Grant St., Port Macquerie.

2ZAA-R. R. Dodd, Lambie St., Tumui
2ZAE-A. R. Greenhalgh, Lot 41,
Grove Pde., Adamstown.

Manager 1 NIV-II. R. Hunter, Bob's Am.

NJ-R. J Collins, St Bulla Rd., Strathmers.

NJ-R. J Collins, St Bulla Rd., Strathmers.

NJ-R. J Collins, St McKinson Rd., Mc R. Hunter, "Bob's Kuob," Golf Pda. binson, 1 Joffre St., Croydon. Tilley, Old Reservoir Rd., Relgrave.

J. G. Foster, 39 Leonard St., Frankston

H. W. Elliz, 465 Hoddle St., Clifton Hill

Ireland, 11 Talaskia Rd., Upper Fero tree Gulty.

3AJQ-J R. Kling, Lot 8, Cassia Gr., Franketon
L. Bobinson, S Reid St., Murram Decra. SALO-F A Freeman, 14 Riversdale Rd., Chil-well, Geclong. SAVE-E V. Avenell, 64 Burrindi Rd., Caul-Bald. SZRT-K. A. Thomson, 444 Whitehorse Rd.,

Queensland 4JA--J. A. Marston, 39 Norman St., Deagon

South Atteirable SAL—K. S. Harris, 38 King William Roed, Goodwood SDZ—J A. Casey, Bowman St., Crystal Brook, 52K—J B. Hawke, Bute SON—C. J. Othen, 45 Pekina St., Eden Hills. SYZ—J. J. Marten, Lot S, Keynes Ave., Warradale

E. Gram. SHK-D Graham, 108 Edenbarough St.,

SRH-R. A. Hallamore, 14 Curiew Rd., Dalkeith.
T. W. Reed, 172 Shepparton Rd., Victoria Park,
6WU—R. Jacochke, Moora.

7AE-S. W. Carter, 16 Reid St., Kings Meadows, Launceston.

CANCELLED CALL SIGNS Australian Capital Territory IJG-N. S. Hill. Now VK2/G.

New South Wales. M. Temby Transferred to South Aus. 22.1—H. M. Tomby
22.1—H. M. Tomby
22.1—L. D. Ewing,
22.1—J. H. Froser
22.10—N. Thuge
22.1—E. L. King, Now VK2.10
22.1—K. L. King, Now VK2.10
22.1—K. O. Hill. Now VK2.10
2

Victoria N Sernel 3ABU—W. A. Brownbill. 3ABW—R. J. Heighway. 1AGU—H. Chapman. Openneland

4ZAB-C. T. Amoore. Now YK4TA. South Australia SJD-J. M. Coulter
SLZ-A. S. W. Taylor. Transferred to Victoria
SWY-J. F. Westley. Transferred to Takmania 7AM-L. G. Arnold.

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 SHEET METAL. Chassis of all types for radio & TV assemblies. Communications Instrument Cabinets, casings and covers for machinery, protective metal work for TV equipment, etc., to

Page 15

Amateur Radio, July, 1957

FIFTY-SIX MEGACYCLES AND ABOVE

56 Mc. NOTES

The advent of Z. calls on the 56 Mc. bond of the control of the co

down and lost in the thick fluth growth of gram. (News of recent and projected 80 Me. selving to wasted argently for this estama by VEROF as that all those interested many there in the year are on the hand year are through the page gat to have the other through the page gat the page of the page and the page also described the page of the page of

V M.F. RECORDS

VKTPF claims to have made the first contact with VKT2CW on 164 Mc. As both VKTPF and VKTLZ are approximately equal distances from VK3 stations, the record should be VKTPF/TLZ to VKZ2CW, a distance of 512 miles. Here is another one for the records. VKTPF to VKZ2AW, 466 miles, made on 187,451.

NEW SOUTH WALES

Now that Z calls are allowed to operate in the 5 mx band it is expected that the Val.4. and Tv. Group will become more active than ever before. Several 2 mx boys have already indicated their desire to work more DX and

sure before. Several I may soors have already minimized that desires to work more DX and The 3 mr. hard was overy active at the The 3 mr. hard was overy active at the other bard was over active at the control of the several properties. The several properties of the several prop comp. and MZAV at Lapstone R.A.A.F. etta. Dave JAWZ was the fox for the hidden critter hunt held on Wednesday night. 28th day, and the only hound to find him before time captred was Dric BAPM. An excellent interesting evening, News of the treasure hand neighborhood of the companies had not be next insue.—AAPM.

Congratuations are in order for lan BALZ
Congratuations are in order for lan BALZ
very hard at this Contest, particularly in the
land fortistant and the viru was a well deserved
changes become of the domination of Z calls
changes become of the domination of Z calls
contest may expend nesses of list former Intersite propularity
has been a slight increase in a
civity on this hand over resent when but
even to, things are still prefly Michael in Congration of the contest of the con

ARIC Ese M.P. S. M.W. et al. M.S. M.E.

MARI Ese M.P. S. M. M.W. et al. M.S. M.E.

Particular harded here included TWS JALT., EAST,

Bartines harded here included TWS JALT., EAST,

December of the Committee of

Court in stands that small made, seen frequent research
something before than 8 is a 'regard-horizontal something before than 8 is a 'regard-horizontal something before than 8 is a 'regard-horizontal something before the something of the 'regard' of the

SOUTH AUSTRALIA

The usual LAI, meeting was hold herbiside months, duffing which one type was head to meeting duffing which one type was head of get to it are it. I always a few or to be a superior of the su

ture George, and rouch appreciated by quite a few. Reg SRR has a signal on SR Mc which is on automatic transmission from 180 to 2000 hrs. C.S.T. with a beam pointing West, awaiting the break through of course, but would appreciate reports and contacts from anyone. The release of ASD transmission double idde-

aspectate report, and contact from anyone aspectate report, and contact from anyone band, reduced certain to all hands, including about reduced certain to all hands, including approach for blakesed modulators and the like any state of the same contact and the like and the previously. Here had quite a free modulator on this matter, after the like and the

the carrier only level."

Of course, any of you who have an s.a.b.
generator for the d.c. bands can get into business sasily and quickly, but there are not too
reany of us so set up, so to give a lead on it
the following is an abridged story from his
letter that will give anyone a starting point.

First of all he was appared to the contraction of the the believing in an accused entry-assessment. First of all he uses a cascellar half lattice. First of all he uses a cascellar half acceptance of the control of the second of the control of the control

band-pass as the Proquency makes it is loaded of the Control of th

with a 8700 chm resision?

"Blue circuit of the \$AGG resision of the AGG resision of t

also regulated
Of course if you want to wander around the
band, make up a v.f.o. in place of the 800
Kc. xala osc., because as the frequency is raised to 144 by beterodynes the final fre-quency stability is equal to that obtainable ea as 8000 v.f.o. which can be made very

cei Bit. 8000 v.Lo. wenne was or on the Mc. mix-ers and amplifiers are made from old if trans-sers. And the mode in the many of the second of the mode of the mode of the bull for the purpose. The only ituning even-tuals brought out to the front being grid and channel support the lot with the power gap-plies amon time and separatic. Shielded wiring for their year of the mode of the mode of the for their year of the mode of the mode of the year enough to sized things going set me know, but the shower host quarter received

to date and at least will be a means of creating some interest and to start a new line of thought on vh.f. Of course there is nothing to prevent the some ideas being applied to 55 megs—get there easter anyway Now all stand back whilst we rush for those crystals.—SEF

Typidal—SEP
TABLE AUSTERN AUSTRALIA
The Foreign Typidal Typida

The very fine evening.

Now about this other function A Kitchen
Tea for Waily &CAA and his YL on 11th May
Tea for Waily &CAA and his YL on 11th May
Tea for the State of the State of the State
Valuel from the Value for the State
your troubles be little ones and may we see
more of you on the air from now on.

The V.h.f. Group monthly meeting was beid
at Dennis &AW = QTH on Sat svenths, 11th

Low Drift Crystals

AMATEUR BANDS

ACCURACY 0.02% OF STATED FREQUENCY

3.5 Me. and 7 Mc. Unmounted ... 22 10 0 Mounted £3 0 0 12.5 and 14 Mc. Fundamental Crystals, "Low Drift,"

Mounted only, £5. THESE PRICES DO NOT INCLUDE SALES TAX. Spot Frequency Crystals

Prices on Application. Regrinds &1/10/0

MAXWELL HOWDEN

15 CLAREMONT CRES., CANTERBURY, E.7, VICTORIA

May. Attendance again was very good. After the usual business, etc., was disposed of, we were treated to a fine lecture on Transistors by P.M.G. Engineer, Mr. John Sanderz, con-cluding with tests of a two stage transistor amplifer—in all a good show.

With the allocation of the 56 Mc. A.O.C.P's. It is hoped that coul-ventuate with the East. eventuate with the East.

After several crossband contacts, \$5-144 Mc.,
Don 62AV worked Tom 62AF to make what
we think the first Z. 58 Mc., \$80. Duplex
working has a lot to reconstrend it. Bolo 880
also worked his first full contact with 52AV
on \$6 Mc. One of Role's remarks being, "Twe
been waiting a long time for this," \$2AV.

Activity on 3 mx in the Newton Zone has been very new with a macrossist of our grant to be the control of the c work four new stations—32DI, 32DX, 3AT 3KF, as well as 3ALZ, 3RK, 32O, 3AE 26 were made barder by QSB, 7LZ QR worked SALZ on c.w. on 7th and \$ti

May
A watch was kept on conditions and with
the baroneter up to 30.6 ins., TLZ and TPP
worked ALZ on c.w., with signals later strong
snough for phone, on 4th June. TPP worked
SIK on c.w. as well. LALZ was again worked
on 8th and 8th June, signals on the 8th being
weaker with QSB. If appears that if conditions are watched, QSOs with VES may be an all-year-round affair—TPT.

JUNE 1957 CALL BOOK

The new issue of the Australian Radio Amateur Call Book is now available. Make certain you purchase your copy early as only a limited supply has been printed. D.X.C.C. LISTING

Listed below are the highest twelve members in each section. New members and those whose totals have been amended will also be shown. PHONE Cer. C'nt-VK4HR VK4FJ VK1ATN VK5RU VK3BZ cw Call VKSBY VKSBY VKEL VKEL VKSRU VKSRX

VKSJT . 56 114

Cer. C'nt-No. ries 8 229 7 233

VESJT _ 63 120

YL CORNER

BY PHYL MONCURS

WHAT IS A HAM?

WHAT IS A Exam:

A Ham is one of a species of strange characters who live, eat, breathe and talking nothing but Radio. He has a language all his own which normal people do not comprehend, one has to be tainted with his disease to do so, Under the laws of this language his wife and children are pootically named XVI. and hardwing the strange of the language his wife and the children are pootically named XVI. and hardwing the strange of the language his wife and hardwing his strange with the strange of the strange of the language his wife and hardwing his strange of the language his wife and hardwing his strange of the language his wife and hardwing his strange of the language his wife and hardwing his strange of the language his wife his high language his wife high language high language his wife high language high language

mention of the Redox Man is a serial of wree and Monta. Long But and were fitting areas the flower is by you. Table hits of wire fulling areas the flower is by you. Table hits of write that one on the more after continually prevent you from the property of the continual property you wait to be a serial to describe your whonever you wait may be a serial to describe your whonever you wait to your westime cleans. With I had do not not not to be a serial t

And knobs Knobs on everything. But knobs that only he, the exalted one may turn, and never meant to amuse the small harmonic for whom they always seem to have so much tas-

His Radio friends, he rarely has any other sort, are all types similar to himself, vague mysterious creatures, one is never quite sur-whether they are learnedly elever or terribly

dumb. Generally untidy in appearance, he has little interest in Colone, which are only necessary meets to be considered to the construction of the colone of

Deam
His musical appreciation appears to be exceedingly limited and extends only to the
appreciation of what is generally known as
"tone", to which he seems to be able to listen
for periods of very great length His XYL
on the other hand unsally has, it any, a very
lew appreciation of the said "tone".

All Hama have one thing in common, they all have a QTM. a quase turn of a home of the same of the same

In his shack every Ham has a dee-vice which appears to have a multiple of uses, but is never wanted until it has been borrowed by some other Ham

by some other Time.

A Rina is no who at loose other-work of the control of the c

* 235 Union Road, Ascot Vale, Vic.

DX ACTIVITY BY VK2QL[†]

Opinions vary this month as to the band conditions, judging from the comments of our contributors. If any of the gang have been watching on the band for me, my apologies as I have not been there very much.

NEWS AND NOTES

VPIEE is on 21180 Kc. a.m. around 0300z (4EL).

Christmas Is, notes in a recent issue were somewhat inaccurate. VR3B has never left Fanning Is., nor has he any plans to go to Xmas Is. VE3F, VR3G and VR3H have been heard all giving their QTH as Xmas Is. There appears to be confliction as to whether they are counted as a separate country VESF said they are the same as Fanning Is, but I believe a recent "QST" gave separate identification.

CR7LU complains of the time it is taking VK QSLs to reach him. In 1956 he received a batch of cards for 1952 QSOs and that is the last he has received.

EL5A is looking for VK contacts on 14 Mc. phone at 0700z (5WO).

Navassa Is. is in the news again with a proposed expedition in the making for a limited period of 36 hours. The

date is unknown (5WO). The licensed ZK2AB advises 2AJR that the station at present signing ZK-2AB is a "pirate." The licensed station has not been active for some time. His name is Chas., so if you work ZK2AB signing another name, you are out of luck, as you are QSOing the "joey."

3W8AA has now forwarded a big batch of cards to 2AIR for VK and ZL contacts and Alan has now put these into the Bureau. ACTIVITIES

8.5 Me.: Nil reports this month

3.5 Me.: NI TSDUCK WIM MODILE.
7 Me. 1AMB FKRAT' KLT'- FKRAC BEE:
95: CNNJZ FKRAT, DUBUX, FAREG ODSAI
M. UOSKAA, TIWS/MM, ZRIVY, ZRIA
od De Balforr HYSFL, KHE, VRNDA, J.
[1A.LSRS] DUBWX, JA.

COMPAN, POSSON, AMB PURCE, MEDIC CONGRO CTRAIN, IPLICO, HERRE, VIPKED CXXCO, WAVKWOOI, MCMUSK, ZISAR, HIGHI, VIRAG SWO, SEAKE, VISAR, VIPKED CXXCO, WAVKWOOI, MCMUSK, ZISAR, VIPKED CXXCO, WAVKWOOI, MCMUSK, ZISAR, VIPKED, CXXCO, WAVKWOOI, MCMUSK, ZISAR, WAVKWOOI, WAXWOOI, WA † Frank T Hine, 30 Abbotsford Road, Hose bush, N.S.W. • Call signs and prefixes worked. z—zero time—G.M.T.

ZI Me. C.W.: \$AB: VK* and ZS*. 2AMB ON*, OH* IQL* UCIKAB*, UARKFG*. IE-SAB*, OAGAU, SAITH SWO: YNIAA*. \$BB: HEZLD*, DL*, G*, W*

HEELD', DL', G', W',

H MC, PASSET LARRE, C', W', GMINET',
ILAMU, VERAR, FERAR, CRESP, VERLT, VGER, COLL, SALTON, VPIEE, FIRED, VPEEX,
VERAR AWO G', CRESP, 'LARF', VPIERA,
VPICAT, CEDIO', SBB GOO'G', VPIELY
VPICAT, KREED', SBB GE BAHSE; GONGHE,
CHEK, EA LARY, SATYL, VSIAT, HIJTH
KCHE, ZPICA, LUML, VYSAD, KRIEW, VPILE, HELL, VPIEL, VPIELY, LARTIN, VFIELD,

28 Mc. CW * SAB: VPSCO*, VKSLC*, VK-6GU*, VK2AMB*, ZSSLR*, ZESJB*. 25 Mc. Phane: KIT. W** KHS** VR2** JA**
PYSAGS** PYSKGS** LUMMAR**, HPEER**, ZS**
PRE**, ZS**, Z

QTH- OF INTEREST HHHLD-Box 506, Port au Prince.

VR3F-QSL via R.S.G.B. ZCSDA-Cpl. Max Anderson, R.A.F. Detechment, Labuan (BERS195).
ZSSP-Norm Eller, Box 35, Francistown (BERS-195). 984DE-Karlstrasse 21, Klarenthal (BERS125). HS18-P.O. Box 1628, Bangkok (Rod De Bal-

R.D. CONTEST

In addition to the points in the scoring table that may be scored by a contestant (see rules "A.R." June, '57), a bonus of 25 points may be added to the score for the first contact with each call area worked on 56 Mc. or above.

VK SCORES FOR THE 1956 "CQ" WORLD-WIDE DX CONTEST

C.W. Section, Single Operator Contestants whose calls are in bold type receive awards. Call Sign Band Pis. OSOs Zan C.C. Walls

VE2GW All 317012 664 66 100 105490 336 2ADE 101260 987 5W0 17664 138 24 10150 6R.U 205209 TWA 3821 51 2JX 16489 140 1ALR 14 SAIB 209 3AMB 61410 3CX 23977 4174 54 18 7UW 242 3XB 55500

Phone Section, Single Operator All Contestants listed received awards. Pis. OSOs Zeo, C.C. Watte Call Stra Rand

VK2ADE All 30992 110 40 100 5WO 10191 16 27 83 SRU 28884 115 14443 19 32 27 459 5 100 21 1872 34 12 24 14 36 15246 42 100 -50 14 6159

SAMR

OBL: RECEIVED 2AMB* VPIAD VKIRW (Coce Is), CESHV, VRAAA, HISEE SWO. FIRAM JZOPH BERS-HASHW, LZIKEP, OAAU, TIAWR, UASH, LISWY, VKRAJ (Coce Is), VQUKIF, VRIM, ZCEDA, ZESP, SEDE Red De Baleur; VRIM, ZCEDA, ZESP, SEDE Red De Baleur; VRIM, ZCEDA, ZESP, SEDE Red De Baleur;

WHENA VIGAR, THOSE GREAT HE ARE AND A THOSE AND A THOS

I hope that by the time you receive this opp, I may be on the band a little more and let some notes over the air MOSPINERIC PREDICTIONS FOR JULY 1957



S.W.L. SECTION^{*}

Complied by Ian J Hunt, WIA-L3007, 311 St. George's Road, Northcote, N.18, Vic.

John Campbell, WIA-LSOII, lels us into ecrets from the land of parks, churches a viver with a plug-bole. In the YES of urrent listening contest on 14 Mc. soma seal scores are being smassed and practi very member is listening as hard as he



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Amateur Radio, July, 1957

FEDERAL, QSL, and



DIVISIONAL NOTES

FEDERAL

NEW FEDERAL COUNCILLOS EN YES
Following the transfer of Doug Lloyd, VKCQ, hack to VKI the Pagua and New Gulnes
to the position of Federal Councilior
The VKR Division and the Institute generally
the too the position of Federal Councilior
The VKR Division and the Institute generally
the too a very civic part in affairs during the
early days of that Division's fermation. His
early days of that Division's fermation. His
early days of that Division's fermation. His
early that the councillor meat productive. It is
hoped that he will find time to continue in
some phase of the Enathric's extivities. NEW PEDERAL COUNCILLOR IN VES In Russ, VKSXK, VKS Division has a worthy successor and best wishes go to him in assuming his new position.

SPECIAL CALL FOR GSL CARDS It has been brought to the notice of Federal Executive that the London Members' Luncheon Club of the R.S.G.S. is most interested in obtaining the QSL cards of those members of obtaining the QSL cards of those members of other solutions that they have entertained at their huncheons.

their buncheons. It is known that a number of VK members have availed themselves of the cordini invitation of this club and Federal Executive sug-tion of this club and Federal Executive sug-tion of the cordinate of their cerea. Let's make sure that VK is represented 100 per cent.

FURTHER LIST OF SUCCESSFUL AMATEUR CANDIDATES

Parker, Mt. Besuly, Victoria. E. A. Gehrrke, 32 Norma St., Mile End. S.A. Eder, 107 Alice Street, Bellevise, W.A. F. Jasechke, Moors, W.A. H. Clinch, Moors, W.A.

FED. CONTEST COMMITTEE FED. CONTEST COMMITTEE
Advance copy of the results of the 1884 "Cg."
DX Contest was received from the DX Contest
Commun. The second of the 1884 "Cg."
DX Contest was received from the DX Contest
Commun. The second of the 1884 "Cg. The 1884 "

The congratulations of the Committee go

Regarding our difficulties awarded for ANY A.A. Contest, the Contest Manager. Mr Recollichards, VESDO, reports that all have been couled and there should be none outstanding. A very mentionious effort on his part. G. M. Bowen, VKSKU, Chairman.

FEDERAL QSL BUREAU Writer has been on viscolin during Agell with the first process of the f

NEW SOUTH WALES **HUNTER SEANCH**

The next meeting of the Hunter Branch will be held at the University of Technology on tith July Also an informal get-together on the fourth Wednesday of each month at Bill BCT's place of business.

falled while moders and pay contess aware as well as the contess and pay conte

VICTORIA

Over the years we have been privileged to hear some very fine lectures at our monthly meetings, and that given at the meeting on the 5th June was no exception. It is always a source of wonder to find the number of people who are always prepared to give of their time and talents to the lactitute in this way. The

members who errange these falls are to be comprehended for their effort on our behalf with the second of the secon

Meany Musical ser due droit again to a very your will not be the service of the service will be held at the sense that the service will be held at the sense that the service will be held at the sense that the service will be held at the sense that the sense of the service will be held at the sense that the first and the service will be sense that the first and the sense that the se

had nothing to not fee themselves thousand to make the should ill size. The make What should ill size the Mr. The make What should ill size the Mr. May, our Administration Secretary, has been supported to the should be supported to the same of th

rant tew members admitted Full Members—K. Thomson (3287), E. V. Avenali (3AVE), H. Goldsworthy 3ZDL, Associate—C. Bees, M. G. Johnston, H. W. Wilkinson, J. C. Hesver

X. C. Heaver

SO METER TRANSMITTER HUNT
This bunt was held on 12th May and was
won by the transmitter! It was hidden by
IE and co, on the north bank of the Years
half a mile downstream from Durke Road
competitors) and about seventy people had a
hillsrous effection among the williews, the
wattles, the boxthorms, and the blackberries.
XXLia and barnocles had time to offer much advice.

Gymnastic efforts, on the fallen wattle trees in the river, discovered the co-ax feed coming under water from a box buried in the same bank that surported the "antenna farm," made

The second selection of the second se

DUDLANDSCHOOL

The control of the first property of the control of

comments—the raw developed in the way to write care under the control of the cont

of notes, but once your correspondent dexemble from the heights of 15 and 10 mx with a C4ZU to 30 and 40 with a dipole, he hopes to have some news of interest next month.

GEELONG AMATEUR RADIO CLUB most informative evening was given by host builder, at our last meeting. The speaker devoted much time to the procedure necessary is rigging sarrisis," the types of splicing re-quired and the methods adopted, as well as the raising and lowering of tall masts.

plainted and refitted the shark and hopes to be on the air soon.

The new syllabus for the ensuing year has been drawn up and the election of officers will take place soon for the club. Our zone hook-up night is Thursday at 8 p.m.—what about dropping in.

QUEENSLAND

QUEENSLAND

Then you have happened the paid of the pai

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Page 22 Amateur Radio, July, 1957

ores (i.e. Industrial areas and cities) should be conversed with civil defence proceedings with civil defence proceedings with the civil defence of the civi

Again a good solution in the last mounthly species last, from Brisdane in time for the period last, from Brisdane in time for the season of th

and errangements be made for evaluating use a Res CLR then gave an interesting better or all, which was attentively lidered to ask with was attentively lidered to ask with the control of the control of

MARYBOROUGH

All who MANYDOROUGH

All who is the feet presimilation, has
one span, and the second of the new
off, which will have a single 807 float. Will
one span, and the second of the second
as put a signal into Sydney.

Me pertible ing. His one hall with final
span, a signal into Sydney.

Me pertible ing. His one hall with final
span, a signal into Sydney.

Me pertible ing. His one for the second
span, and the second is believed trained.

He for the second in the second in the second
particular into the second in the second

SOUTH AUSTRALIA

At our last meeting we once again saw the At our last meeting we once again saw the their last-content had the choice of sitting on their last-content had the choice of sitting on the furniture at the back of the half or stand-ing around the walks. President John Builling, the speaker for the evening, IXU--none other than Gordon Bowen, who always seems to be able to pull an interesting lecture out of hat.

ordon's subject was "Multiband Antennae
with his grasp of the subject he made:
deceptively easy to load a skywire wit

as all-band social designed for use by the stone which was represented from 10 Mer. Randwidth user represents from 10 Mer. Randwidth user represent from 10 Mer. Randwidth user representation of the 20 chan policy of the 10 Mer. Randwidth user represented in migration of spectrum and under current frequencies and adulated until they represented an impactance of spectrum and the proposal distantance of the process of the process distantance of the process distantance where the process of the process distantance where the process of the process distantance where the process of the proces

and the separate the sealing of the most-icing. It is also to the control of the index. It is also to the control of the index. It is also to the control of the index. It is also to the control of the control of Secretary Reise SAA for the control of sering when he associated was correspond to Secretary Reise SAA for the control of Secretary Reise SAA for the control of Secretary Reise SAA for the control about mosthing, good on you my friend, for about mosthing, good on you my friend, for about mosthing, good on you my friend, for the control of the we wiscome quite a leve new members from exper-very control of the cell of the control of the control of the control of the cell of the control of the control of the control of the cell of the control of the control of the control of the control of the cell of the control of the control of the control of the control of the cell of the control of the control of the control of the control of the cell of the control of the cell of the control of the control of the control of the control of the cell of the control of the control of the control of the control of the cell of the control of the control of the control of the control of the cell of the control of the control of the control of the control of the cell of the control of the control of the control of the control of the cell of the control of the cell of the control of the control of the control of the control of the cell of the control of the control of the control of the control of the cell of the control of

The more year memorrolly and don't large, when you would report to the state you remoderably according to the state of the

The A.O.C.P. Class continues to function well and has of course resumed after the recess ose down fellows and knock it over is October.

Don IAMN Resps us informed on activities from the Silver City where I.G.Y. sense to be baving its share of followers, whilst Dave fills baving the share of followers, whilst Dave fills baving the share of followers, whilst Dave fills with the share of the sense of the share of the

Astronomical Society and J.G.Y. link-up, woodered what the Cantinomical Society has been desired to be a seen of the control o

WESTERN AUSTRALIA

WESTERN AUSTRALIA

At the regimal secting for Mar, MT greet an interesting location on the sext for the regimal section of the sext for the section of the sext for the section of the sext for the sext form of t

TASMANIA

"'Tis thine they give away and not their own. Pirates may make cheap pennyworths of their pillage."

Which all good hower that it all Subbas-bless. And perhaps it's recovery to say that here. And perhaps it's recovery to say that here. And perhaps it's recovery to say that the same that the same to the same it's recovery to the same that the it's recovery to the same that the Anyway. Six a good deal the has been recovery to the same that the recovery to the same that the same was the same that the same that the recovery to the same that the same transport to the same transport to the same that the same transport to the same tr

be, receiver.

Three new members to report Bart Comments of the Comment of the Co

NORTH-WEST ZONE

And the summers ang, from 'r Sorry, Bill, but I couldn't rests it. Some of our associates seem to be bout the State prior to the onset of ten Brown, associate from Burnie, h injoying a holiday in Hobart. Did yo ourself known there, Ken? David Se

ure not strong enough to be seen.

mr 783M, still full of enthustam, now

14-hour service on most bands, from

14-hour service on most bands, from

14-RE. Belteve Roy 7RN has taken his

15-bock, Sam, so it looks like brass po

15-lin, The service of the service of the

15-bock star, so it looks like brass po

15-lin, got as far as VK3 by working 3.

15-an ex-VXT. Our President, Jim
nity attended an R.S.L. dinner, be

revisand he behaved himself. Jim-

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Let us get down to each in our per weathern for the removal Amelica whether forced to do so, should be restly as the second of t

The second statistics in the Mantaux bases in The second statistics in the March bases in which commerces with "The releasing statistics of the second statistics of the se -George Cameron, VK5EC

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